

The Process of Having Identified An Adult Eidetic Person and Her Eidetic Experiences in Daily Life

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THE PROCESS OF HAVING IDENTIFIED AN ADULT EIDETIC PERSON AND HER EIDETIC EXPERIENCES IN DAILY LIFE

By

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The process of having identified a 20-yr.-old highly eidetic female subject, her responses to the color imagery experiment, and many cases of her eidetic experiences in daily life were introduced. She was different from the subjects in Haber and his co-workers' experiments (Leask, Haber, and Haber, 1969) in two points; first, she could produce a spontaneous or voluntary eidetic image which was not based on the preceding presentation of a stimulus, and secondly, she seemed to be functionally benefited in her everyday life, positively using her eidetic imagery. Centering around the discrepancies with the findings by Haber and his co-workers, some problems of eidetic imagery, such as consciousness of eidetic imagery in themselves, individual differences, the decisive character of eidetic imagery, conditions for producing it, and its functional significance, were discussed.

INTRODUCTION

For many years after the Second World War, only a few articles on eidetic imagery had been produced. In 1964, however, Haber & Haber reported their research into that subject, and some other articles succeeded to the Haber & Haber's. It was expected then that research on eidetic imagery would enter upon a new phase and overall re-examinations would be carried out. However, very few articles have been issued these three years, which suggests that the research has come to a standstill.

There are several reasons why research on eidetic imagery has not been further developed. (a) A study of eidetic images must depend much on a verbal report by a subject, as is usual the case with any other studies on "imagery." (b) Only the limited minority of eidetics, most of whom have been reported to be children, possess such imagery. (c) Thus the phenomenon itself is liable to be considered abnormal and curious (by the majority of noneidetics). (d) The mechanism of eidetic imagery is puzzling. (e) The functions of that phenomenon are yet unknown rather the positive significance of it seems to be regarded doubtful now. (f) As Neisser (1972) pointed out, the individual differences are much larger than the similarities among the eidetics. (g) As most of the researches by the workers in

the school of Marburg were published in the German language, their products are still unfamiliar among English-speaking investigators. (h) Moreover, as Haber & Haber (1964) indicated, the Marburg workers' findings were based on the poor methods, or widely divergent and often inconsistent methods.

To these rather negative situations, the following three points are to be proposed. (a) The study of eidetic imagery totally depending upon a verbal report by a subject, it is one of the indispensable conditions to choose an adult person as its subject. An adult subject, in addition, will be positively motivated to participate in interviews and experiments, both of which usually take one or two hours at each time, and may perhaps require a few months or more in all before the research is finished. (b) The functional aspects of eidetic imagery must be fully under consideration as well as the characteristic. If we carry out further researches on its relevance to memory process in functional aspects, and that to ordinary images (memory images) in characteristic aspects, we would be able to avoid the rather isolated situation that researches on eidetic imagery have been involved in. (c) In the meaning that only a few *Eideticers* are capable to experience eidetic imagery, it may be defined in general as a peculiar phenomenon. However, any such research is to be positively evaluated, since it provides in a sense some favorable conditions to the studies on visual memory and memory images, as Warren (1934) once said in his "*Dictionary of Psychology*" that the eidetic image is "a clear image (usually visual) which possesses an external or perceptual character, though generally recognized as subjective" (p.90).

In this paper the following four points are dealt with : (a) the process how an adult eidetic was found out among the subjects through the experiment as is introduced below, (b) her responses on that occasion, (c) many examples of her eidetic experience in daily life, and (d) some considerations on various problems of eidetic imagery. It is hoped that this paper will contribute to further researches on this phenomenon ; the first half, to the device of identification of an eidetic person and chiefly to some characteristical problems, the latter half, chiefly to some functional problems.

THE PROCESS HOW AN ADULT EIDETIC PERSON WAS IDENTIFIED

A 20-year-old female subject (Y.K.), who possesses extremely eidetic imagery and who will be introduced in the following report, was found by chance, while some preliminary testings for researching into color imagery were being carried out among twenty adult subjects. The principal purpose of the experiment was whether the subjects could color a whole circle, which was drawn on a small neutral card, with an appointed color image. One of the twenty subjects, YK, having no direct

connection with the original purpose of the experiment, could see inside of the circle vivid images of concrete shape and color, not mere color image, at any time when a certain color name was given to her. She gave a signal by tapping the desk with her right-hand forefinger, every time such an eidetic image appeared or it changed in its figure. She could also scan the images as if she were looking at paintings or photographs. The methods used and YK's responses during the experiment are described as follows.*

Method

Subjects: Twenty 18-20-year-old students of Yamagata Women's Junior College.

Applied stimuli: A white card of 12.5cm by 20cm (Barber, 1959) and a gray card of 10cm by 15cm (Naruse, 1960); a circle of 5cm in diameter was drawn in the center of the white card, and that of 2cm in the gray one.

Instruction: The experimenter told the subjects to imagine blue color inside the circle; and then red, yellow, and green.

Procedure: With the white card first and then the gray, 3 minutes were assigned to each of the four colors. Thus eight testings were given to the subjects altogether. After each occasion they were required to tell whether a color image appeared or not, and if did, what it looked like. In cases of need they were requested to draw an image they saw, on a piece of reporting paper with pencil. As for YK, two months after the first experiment she took two more such experiments through the same methods. Twenty-four testings were after all carried out on her.

Results

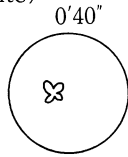
At each of the testings YK visualized eidetic images, all of which were associated with the appointed color names; besides they changed their figures as time went by in the 3 minutes. Whenever she tapped on the desk with her forefinger, she meant that an image began to appear inside the circle or it transformed its shape. The responses to nine out of twenty-four testings are introduced in Fig.1, according to the order of those trials. In Fig.1, "Blue," "Red," "Yellow," and "Green" correspond to the appointed colors; "white" and "gray" to the cards; numerals to the passage of time within the assigned 3 minutes.

Discussion

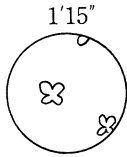
The eidetic images that YK evoked in this experiment are spontaneous or voluntary ones which are not based on the preceding stimulus presentations. These

* This experiment was carried out in December, 1972 and in February, 1973.

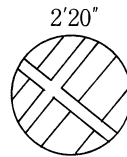
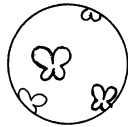
"Yellow(white)"



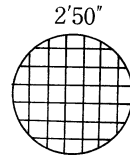
a yellow butterfly appears



it grows gradually and some other butterflies appear

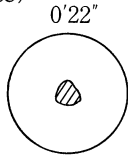


butterflies change into a line-crossed pattern

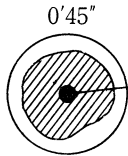


the pattern change into a latticed one, slightly turning rightward

"Green(white)"

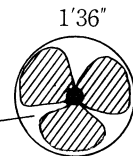


a green triangulated circle



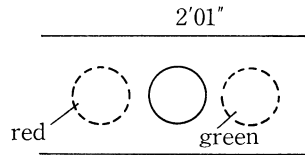
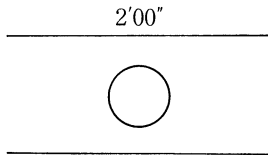
dark green

light green



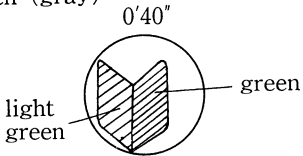
it looks like a fan rather than a clover

"Yellow (gray)"

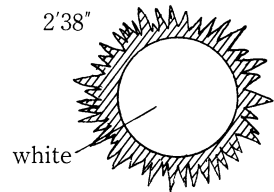
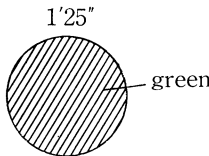


a traffic signal, though red and green are not visualized but sensed vividly†

"Green (gray)"

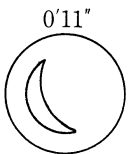


a mark of two-leaf bud appears††

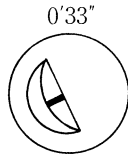


from the circumference appear greenish corona-like beams

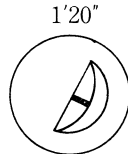
"Yellow (white)"



a crescent-like shape of pure yellow



the shape is abstracted into something like a harp

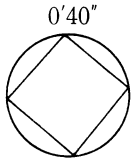


the position changes

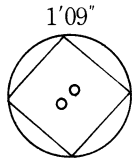


the figure changes into something like a twinkling star

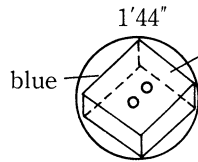
"Blue(gray)"



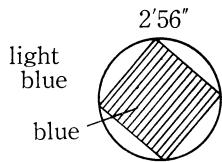
a square with blue lines



two tiny blue-lined holes appear, which imply button holes

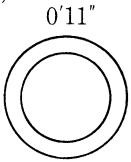


the shape changes into a three-dimensional transparent button

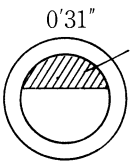


light blue
blue

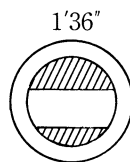
"Blue(white)"



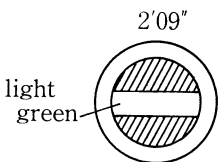
a blue-lined circle appear inside the original one



about one-third of the circle is dyed blue from the top to the center

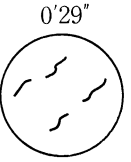


the circle is again dyed blue, but from the bottom to the center

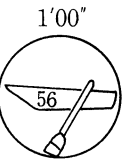


light green

"Blue(gray)"^{†††}



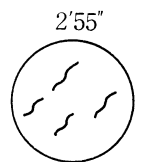
clean surface of the water with some waves on it



a red boat and an oar appear

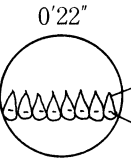


a face of a man appears on the water surface

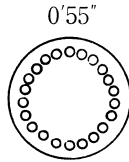


the face disappears after a great effort to erase

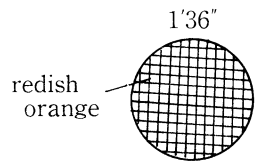
"Red(gray)"^{††††}



flames in a glass range; the range is lit from the side



the flames are now seen from the above; they are seen while putting a pot on it



redish orange

a heated cylinder of an oil stove; the stove is lit

[†] In this time YK was going to a drivers' school everyday to get a license (cf. ^{††}). However, the positions of "red" and "green" lamps in the imagined signal are contrary to the originals.

^{††} This mark is bound to be stucked on an automobile by a beginner driver in order to notify to other drivers. In the image, the yellow leaf of the original mark (the left-hand leaf) is altered greenish.

^{†††} Images are concerned with YK's reminiscences.

^{††††} YK lived in an apartment house, separated from her family. Images tell what she did every evening after coming home from school.

Fig. 1. YK's eidetic responses to the experiment which aimed to study color images.

images are regarded in a sense as her memory images which were projected in front of her eyes for a certain period. She reported that she had a task motivation to produce an image when she was specified a color name, but could not anticipate what would appear, and was only waiting for an image, saying to herself, "Come out! Come out!" Therefore, these eidetic images can be regarded as resulting from unconscious associations from color names. Consecutive changing (or developing) of the evoked images is also based on the associations. Allport (1924) once suggested; "It (the eidetic image) tends to resemble the memory image in respect to its 'associative' characters,"(p.119) or, "In the case of the spontaneous eidetic image he constructs from his previous experience an image (strictly *erfahrungsgemäss*) as a substitute for a situation which is not actually present" (p.118).

It is important that these eidetic images seem not always based on her visual experiences that she has had previously. For example, there were some cases when a designedly abstracted image appeared of which content could not be identified, or some part of the image was discrepant with the original which the image indicated, and so on. These eidetic images, therefore, are probably more suitable to be expressed as imagination images which were projected vividly, rather than memory images.

YK'S EIDETIC EXPERIENCES IN HER DAILY LIFE

The following report deals with many cases of eidetic imagery that YK has experienced in her everyday life since girlhood. Various kinds of her experiences are, after the series of interviews, arranged and re-organized by the author.

How Became Aware of Eidetic Ability

"I," said she, suppose I had a fairly good memory when I went to elementary school at the age of ten or eleven, though I cannot recollect any eidetic experience in those days.* One day, however, when I was in the first year of junior high school, our teacher, who would often stimulate us to work harder, gave me such advice as follows: "I remember a top-A student who graduated from our school a few years ago. She had an excellent memory and could get very good marks in any examination. Though she belonged to a sports club, she never neglected her study. One day she told me that she sometimes perceived clearly the imagined pages in a textbook even while she was engaging herself in club activities. This implies, I guess, how earnestly she studied. If you ever try to work as hard as she did, you'll

* YK came to know the term "eidetic imagery" by participating in experiments, but she did not use it in the interviews. The terms in the following report are used by the author to adjust and clarify what she said.

surely be able to make a much better record at school." This remark set me noticing, for the first time in my life, my own eidetic experience, for I too had often visualized such an image as she had done.*

Use of Eidetic Ability in Study

During my junior high school days, I made it a rule to study for about seven hours everyday after school. Mainly because of the hard work, I could get some 830 marks out of 900 in any examination. In those days I used to spend most of my study hours in learning textbooks and notebooks by heart. The ways how I managed to memorize were different from each other to some extent according to the contents in those books. Eidetic images, however, accompanied in various forms while I was endeavoring to learn those contents by heart.

i) As far as English words or idioms and Chinese characters were concerned, I used to memorize them by writing down each of them on a notebook over and over again. I had to, as a result, prepare a new thick notebook almost every week. While I was moving my right hand and fingers writing down a certain word, another that should follow the present one appeared spontaneously on blank part of the notebook one after another. I remember that such eidetic images seemed to appear always with the movement of my fingers. For instance, when we had a P. E. class outside on the playground, a shape of a certain word often became visible on the surface of the ground as I was touching it with my fingers in a crouch. On such occasions, I perceived images clearly if the ground was dry or sandy; if wet or dark-colored, they seldom appeared.

ii) In order to master such subjects as Japanese and social studies, I accurately and slowly read the textbooks again and again, either silently or vocally, and then tried to memorize all the necessary contents, repeatedly checking up my memory, sometimes by visualizing the images. I would often do this work while walking about with a textbook. After I finished learning by heart to a considerable degree, I could visualize every word or line I memorized, in the sky or on the ground, desk, blackboard, wall and ceiling, or even in the closed eyes. Then, reading the visualized lines or pages by heart, I could say to myself such and such lines were in which page and such and such a page should follow which one. When I read those visualized lines, I could count not more than four or five lines in all, and all the lines in one page would not appear at the same time. I sensed, however, some other words and lines besides the clearly pictured ones; otherwise I should have failed to recognize them as lines in a textbook. As I went on reading lines one by one or moved my eyes to the other part in the imagined pages, I could see new lines.

* It is unknown whether that girl had eidetic ability or not.

When I wished to find out some necessary part in the memorized book, I always had to turn over or ruffle the pages in right order. In other words, if I missed a necessary part, I had to return to the very beginning and repeat the same process, never in the other way. As for another subjects, I memorized all the important matters, such as definitions, theories and their demonstrations in mathematics, just as they were described in a textbook; in which case I could picture the entire page, not only a part of the page.

iii) As to the chronological chart of history, I memorized it in such a way as to roll it forward in my mind, like a film in a camera. The axles of the film-like chart seemed to be somewhere near the outside rims of my glasses. As these axles revolved and the history chart was rolled up, I could follow the chronological passage in the history table behind the closed eyelids. In this case again, I always had to start from the very beginning to find out some necessary age or year. When the image happened to pass the necessary period and I missed it, I had to return to the beginning to trace it again.

iv) In examinations, I could make answers, counting on the images I saw, to those questions which required memorizing to a greater degree. Though I could picture such images anywhere on the desk, on the blackboard, or in the sky, I usually saw them on the desk, for I had few opportunities to look up at the blackboard or sky during the examination hour. Part of a slightly larger looking page in a textbook appeared on the open space of the desk, 1 or 2cm above. The desk was usually an ordinal one made of wood and was painted brownish. The color of the board did not matter at all, but if the desk was an old one with scribbled marks and scars on it, or if some different colors were mixed up, I felt somehow distracted and found it difficult to see images above the desk. On that occasion I could use a celluloid cardboard, if necessary. When I was considering the answers with the examination paper turned over, images often appeared on the back of the paper, but never on the right side. I did not, however, expect that an eidetic image of a textbook would appear, nor did I depend too much on the image. When I made an attempt to recall the previously earnestly memorized things, images often appeared incidentally and they seemed to support me while I was concentrating myself to answering the questions in the examination paper.

v) After I entered a senior high school, I began to have many interests in various fields at school or at home. I, for example, belonged to the Broadcasting Club and often engaged myself in the club activities sometimes as late as eight o'clock in the evening. I also became crazy about singers' groups of popular songs. Thus my way of life was different from what it had been in junior high school days, and I was liable not to concentrate myself for many hours on one specific matter,

such as learning textbooks thoroughly by heart. When we took examinations at senior high school, I did not rely on the images any longer. I saw the images of textbooks and the like much less frequently than I had seen. However, nowadays in junior college, I have occasionally seen some eidetic images of what I endeavored to memorize, during examination periods.

Use of Eidetic Imagery in Games and the Like

Throughout my junior and senior high school days, I would enjoy myself without any difficulty in those games and the like as follows.

i) When one of the classmates, who was good at painting, drew a teacher's semblance, or someone else did a cartoon, the rest of us tried to draw a after those pictures. Unlike my classmates, I seldom had to compare my drawing with the original ones. I could imitate such semblances and cartoons following the images I saw on the paper: once a part of such drawing was done, I could imagine the rest easily, while I was tracing it, the other part appeared... If any part of the images was unclear, I could make it clear by looking at the original pictures again.

ii) We sometimes played at drawing something that was not actually in front of us. We, for example, guessed to fill up some blanks which were purposely made in the transcription of seat chart, recalling the arrangement of seats in our classroom. The original chart I had written at the beginning of the term and tacked on the wall. Unlike my classmates, I did not have to remember who was seated in such and such a seat, and who... I could picture to myself a complete chart of seats and perceive the "names" in the blanks, so I answered right names for right seats with very little difficulty. On another occasion, we drew a vase which was in the classroom; we were then in another room. I could visualize the vase on the palm of my left hand, as if it really were there. Thus I could draw it easily, modeling an eidetic image on my hand. In this way we would often play at drawing various kinds of things by calling to mind. At any time I could remember an object in detail and describe it with ease. But my works did not perfectly resemble to the original. Generally speaking, my performance was about some eighty per cent at degree, I think.

iii) When I was in the first year of senior high school, I made an ornament of stained glasses with pieces of flock paper and cellophane paper for our annual school festival. I modeled it on the work I had seen at another school. Without preparing any draft, I went on cutting the flock and cellophane paper. While I was cutting with scissors, my hands and fingers moved so smoothly, as if I had precisely known the every detail in imitating the model one.

iv) Someone in the class prepared several ambiguous figures and the rest of us guessed what they looked like. First she showed us one of them and in the

twinkling of our eyes she hid it, saying, "What does it look like?" I replied, depending on my instant impression, and after a short while corrected it using my eidetic image.

v) A folk saying in our district goes that if a girl can ever image the face of a man she is yearning for on a stone, any wish that she wishes will come true. We made use of this old saying while cleaning up a classroom and tried to polish the room so clean as such an image might appear on the desk or on the corridor. As for myself, without taking the trouble to do so, I could easily see the face of my favorite boy on the windowpane at any time I liked.

vi) I sometimes see especially impressive letters on the wall. Several months ago, when my lover called up me over the telephone, I read him a letter, which he had sent me about three years before, remembering all the contents in it line by line. As I went into details too much, he was much astonished and asked me if I had the letter in my hand then. The fact was that I had read the letter two or three times since receiving it, but had not looked at it at all those one and a half years. While I was reading the imaged letter, I could even recognize the design and ruler lines on the letter paper, and further the arrangement of the written characters and mistaken or corrected words and lines. It seemed to me that my brains were at that time crammed with previously memorized contents of his letter, and when the memory was excessively impressive, it was somehow projected outside spontaneously. On such an occasion I was apt to feel my head and eyes slightly fevered.

Some Examples of Spontaneous Eidetic Images

i) I see the faces of my family and that of my lover reflected incidentally on the windowpane, or strictly speaking, in the sky or on the fence through the window. I can perceive some of those faces even on the wall when I intend to image them. I remember some examples I experienced during my senior high school days. My youngest brother frequently entered a hospital to be treated for poliomyelitis, and so my mother would often leave home to take care of her sick son at the hospital. When I came home from school to find that my mother and brother were not at home, I felt as if both of them were in the expected places in the house. On that occasion I would see their faces on the windowpane. Especially my brother's face was seen vivid, though its appearance was different in each time, that is, a face when he was convulsed with the disease, one when he got better, or one when he was sleeping. Besides, I saw the faces of my family frequently when I was much concerned about them thinking that I might trouble them or I might be doing something wrong.

ii) When a lecture makes deep impression on me, or when some phrases

uttered in the lecture attract me, or when some characters are written on the blackboard in especially good hand, these letters and phrases sometimes reappear on the blank blackboard even during the next lesson. Usually I am not so much troubled by those visualized letters, considering them as suggestions of my interest in the previous class. I have to, however, make an attempt to switch the mental set to erase them if they disturb me too much; otherwise, I can hardly concentrate myself on the new lesson. When I was at junior high school, I remember seeing an anatomical chart of flog drawn in chalk in the previous lesson reappear with the same kinds of colors used (white, yellow and red) and on the same position of the blackboard. Further I remember seeing some other charts, figures and letters reappear on the same part of the blank blackboard during the next hour, after they had been completely erased.

iii) I am occasionally surprised to notice that some deeply impressed lines in one of my most favorite poems happen to appear in the sky. In most of these cases only the words and lines in printing types emerge, but in some cases those drawn in handwriting with something like charcoal come into sight in the sky. The letters look larger than they really are in the book of poems. Not all the poem emerges altogether, but three or four lines of the most impressive part first, and then the following ones; while, when I try to recall the title of the poem, the title and the beginning part appear line by line. To give a similar example, words and lines in a page of a book, such as a poetry book or a novel, appear somewhere on the blank wall, when I imagine the contents of the book keeping it open on the desk, or when I close the book after appreciating it. Generally speaking, these images of lines in a page seldom or never emerge, if the wall is painted in several different kinds of colors or has no blank space for projecting.

Responses of Friends

On an occasion when our boyfriends became a topic of our conversation while at junior high school, I told my classmates that I could really see the letter from my boyfriend on the windowpane as it was just reflected there. Hearing it, they treated me like a queer bird, saying, "Are you a daydreamer?," "Aren't you telling a lie?," and "You can't remember the whole letter by heart so much." Nobody knew, however, that I could see the visualized image of textbooks, as I did not tell anything about it.

Dreams

I habitually dream a concrete and definite dream; moreover, I dream of such direct and indirect experiences as what I did and saw and read the day or a few days before. The content of my dream is usually so concrete and detailed that I may make a story of it; thus I could be a good story-teller while I am dreaming a

dream.

DISCUSSION

Haber and his co-workers (Leask, Haber & Haber 1969) suggested by a large-scale experimental investigation that the memories of eidetic children were not improved as compared to noneidetic children, that they did not use eidetic imagery for memorizing (it was as if they paid no attention to their image in organizing their memory), and that eidetic imagery was not of a vivid memorial characters but of a perceptual characters. They showed also by the various tests that eidetic children were not different from the great majority except this perceptual skill. The interviews both on the child and his parent showed that they did not use the images in their studies and games, rather in some cases they felt confused during reading or the like.

The reason why a case of an adult highly eidetic person (YK) has been introduced in this report is that she, different from the Haber's subjects, can produce, so to speak, a spontaneous eidetic image which is not depend on the preceding stimulus presentation, as has been introduced in the first half, and that she seems to use eidetic images positively and be benefited in the functional aspects in her daily life, as has been introduced in the latter half. From now on, some problems of eidetic imagery will be considered, centering around the discrepancies with Haber and his co-workers' findings. These considerations have, as a matter of course, meanings of working hypotheses.

Acceptance of Eidetic Imagery among the Subjects

i) *The first experience of eidetic imagery* : None of the Haber's subjects could remember when they experienced eidetic imagery for the first time. YK does not remember such experiences in her elementary school days, either. This fact may suggest that eidetic imagery is not a phenomenon which comes into being suddenly at a certain time in one's life.

ii) *Consciousness of eidetic imagery in daily life* : Haber's subjects said that they were conversant about their eidetic ability when requested an interview. There can be every possibility that it was due to their participation in eidetic imagery experiments. There may be a possibility again that eidetic children live without being conscious of their eidetic imagery, not only in the case they produce it only in the experimental situations but also in the case they produce it well in their ordinary life, as it is probably an obviously usual matter for them. Answering the question Haber's subjects indicated that they experienced the images while watching movies or TV. It is interesting that YK herself did not talk anything about movies or TV. She was proved to be able to produce images while watching TV when she was

examined afterwards. Movies or TV might be easily inferred from their experiences in the experimental situations, or might be easily thought of. While Haber and his co-workers' interviews were reported uninformative, fruitful in YK, which probably owes that YK possesses highly eidetic ability, that she is conversant about her own experiences well, that she utilizes the image positively and that she has rich introspective ability.

iii) Interference by eidetic imagery : In Haber's New Haven samples, approximately half of the children felt that their images interfered with reading and the rest half experienced no interference or confusion. In Rochester samples, most subjects experienced no such interference, but a sizable minority reported confusion due to the superimposition of eidetic images on the next page. YK seems not to take her images as obstructions but to give rather positive values. It sometimes happens that she is surprised at a sudden appearance of unintentional eidetic images as is the case with the lines of a poem in the sky; in most cases, however, eidetic images harmonize exactly with her mind at that moment. Unless eidetic imagery matches with one's own representation process, it cannot be utilized.

Problems of Each Individual

i) Individual differences : It is well known that there is a wide discrepancy in the quality of eidetic images among the eidetics. Eidetic imagery differs in various aspects, such as in duration, completeness (accuracy), clearness, controllability, reproducibility after the lapse of time, voluntary evocationability, etc. For example, Neisser (1972) pointed out that "even in the restricted range of persons who have been called 'eidetikers', the differences are almost more striking than the similarities" (p.244). It is always necessary to take the problem of individual differences into account. Therefore, the analysis is expected to make the differences clear among the Haber's subjects. Though it is not certain whether YK's case is a peculiar one among the eidetics, it must be a precious case to elucidate the phenomenon.

ii) Spontaneous eidetic image which is not based on the stimulus presentation : One of the interesting facts in YK is that she can produce, what is called, a spontaneous eidetic image which does not rely on the preceding stimulus presentation; which is not accordance with Haber's subjects. YK could develop images by association with the appointed names of color as was shown in the first half of this paper; moreover, though a full report is not made here, she could produce images on a neutral card when she was instructed to produce anything, to make a small object, or to imagine a flower, an automobile, a fruit, mother's face, etc., or a circle, a triangle, etc. However, she does not seem to experience, nor to be conscious of, such spontaneous eidetic images except mother's face in her daily life.

Therefore, these may be responses to a task.

iii) Reproduction of eidetic imagery after a lapse of time : YK often produces, as was seen the previously mentioned interviews, eidetic images which are related to real objects but not necessarily based on the preceding presentation of stimulus objects, such as textbooks, faces, poems, letters, etc. Examined by picture stimulation, she was proved to be able to reproduce an image after a lapse of time, for example, next day or after a week, though its content was considerably constructed. Haber's subjects could not bring back images once they had disappeared with one exception of a girl. It is thus supposed that reproducibility at will is a necessary condition for utilizing eidetic imagery. The eidetic imagery following stimulus presentation need not to be utilized so much from which to get informations; because, in the ordinary situation, the necessary amount of informations can be got directly from the original stimulus. Eidetic imagery will be significant in utilizing only when it is evoked in the situation where the original stimulus cannot be used.

iv) Eidetic imagery of B-type and T-type: Marburg researchers classified the variegatedly appeared eidetic imagery into two groups, B-type and T-type. The B-type eidetic imagery can be controlled voluntarily to produce or erase, and sometimes undergoes alterations within its contents and resembles the memory imagery. The T-type appears or disappears with no regard to the voluntary control, but scarcely undergoes alterations and resembles the after image (Klüver, 1928). Setting aside the problem in the validity of this traditional classification, YK's eidetic imagery shows a strong tendency to the B-type. Among the Marburg researchers, it was regarded as an index of the pure B-type that one could produce images of any objects or scenes voluntarily and felt images appear naturally as belonged to oneself, in other words, as matched with one's representation process.

Decisive Character of Eidetic Imagery

As remarked above, eidetic imagery is not always based on the precedently presented stimulus. Therefore, the decisive character of eidetic imagery should be "a clear image which possesses an external or perceptual character, though generally recognized as subjective," as was once defined by Warren (1934, p.90). We can regard it as an essential matter of eidetic imagery that an image is seen vividly in front of one's eyes and recognized as subjective, whether it appears just after the removal of stimulus or after a lapse of time, and whether it is concerned with the visual experience of the actual object or not.

Conditions for Producing Eidetic Imagery

i) Motivation : All the things that met eyes did not become eidetic images in both Haber's subjects and YK. And, as a matter of course, all the memory images

were not always experienced as eidetic images in YK. These suggest the role of motivation in producing eidetic imagery, which has been referred since long before. Therefore, in general, images never appear without motivation, and these images will be turned off by terminating paying attention, such as blinking, looking away, closing eyes, thinking of something else, shaking head, etc., as was reported by Haber and his co-workers (Leask, Haber & Haber, 1969). However, according to the Marburg investigators, in proportion to the increase of aptitude of the T-type eidetic imagery, the image is beyond voluntary control, and does not match one's representation process, and is felt unpleasant.

ii) *Role of verbal coding* : According to Haber, his subjects used verbal rehearsal when they tried to memorize the contents of the picture, which resulted in no or very incomplete eidetic imagery, and they concentrated upon the picture with no verbal rehearsal when they wished to get an image. On these accounts, Haber concluded that eidetic imagery and memory are different process from each other. While, as was known from the interviews, YK memorized a textbook by "reading" it repeatedly, which resulted in the image. Visualizing the image of a certain part meant for her that she memorized that part to the full. YK was also proved to be scanning with a certain verbal rehearsal in her eidetic imagery experiments. She mentioned that she had tried to "memorize" the picture, not by "seeing aimlessly" but by "observing." This discrepancy has a great importance.

iii) *The amount of information and the level of information processing* : Taking notice of the fact that only very poor and fragmental image was brought by the over-informational stimulus in Haber's subjects, it is evident that producing eidetic imagery is based on some sort of "grasping of the meaning." An ordinal picture stimulus of strong concreteness gives an intuitional impression at a glance, "I comprehend it," and an eidetic person must produce a vivid eidetic image, if only he has enough time to get such an impression. On the contrary, such a stimulus as is hard to be grasped the meaning intuitionally seems to be unable to produce the image by a short-time observation. That is, for producing eidetic imagery, the amount of stimulus' information and the level of information processing come into questions. For example, on an occasion that an eidetic person produces subjectively a clear eidetic image but cannot sketch it accurately on the paper, it is suspected that he does not keep the original stimulus in mind so accurately, and the image is not so detailed as to be sketched, no matter how he has a subjective intuitional grasping. For another instance, there must be a great difference between the image which only produces an intuitional comprehension of a "book" and the image which can be read by scanning words and lines. Haber expected that none of the eidetic children would have had an eidetic image of even

part of a page of printed words, because his subjects did not do well in the experiments of letters (Haber, 1969). A page of a book seems impossible to be grasped intuitively by the literally short-term information processing. YK memorized the textbooks eagerly, which resulted in producing an image so clearly as she could read it. It is more correct that eidetic images accompanied when she recalled the memorized contents, rather than that she searched informations in the images.

iv) Effect of practices : YK admitted that she had come to see images more frequently in her daily life since having participated in the eidetic imagery experiments repeatedly. She expressed it as "sensitive to images".

Functional Significance of Eidetic Imagery

i) Accuracy : As was suggested by Haber, eidetic imagery seems not to have the function to copy the original stimulus accurately or photographically and to preserve it. The findings in YK which show the eidetic image being never an accurate copy but of a constructive character will be considered in the next paper (Hatakeyama, in preparation). A subject who was examined by Stromeyer & Psotka (1970) is very interesting, for she could produce, so far as their experimentation showed, remarkably accurate eidetic images.

ii) Confidence : Haber also indicated, referring to Doob (1965), that eidetic imagery did not reproduce the original stimulus accurately but afforded the confidence that it was an accurate copy. This holds true in YK; while she is reporting descriptions of her images, she always tells decisively, not with hesitation but with confidence. This confidence seems to owe the fact that some concrete grasp is brought intuitively by seeing a vivid image in front of the eyes.

iii) Reality : As the present tense experiences are given by eidetic imagery, eidetic experiences are attended with reality. We, the noneidetics, are impossible to grasp the appearance of an object only by verbal strategy, but we can grasp it with reality by the presence of the actual object, or its photograph, picture, illustration, etc., in front of our eyes. As an eidetic image makes the object which is not in existence exist vividly in front of eyes, the image is experienced with great reality.

iv) Repetition of stimulus situations : Allport (1924) assumed the function of eidetic imagery as "to serve the same purpose as does the repetition of a stimulus situation." One of the Haber's subject was very surprised to find out cracks in the letters when he was scanning the eidetic image, which he had not noted while initially scanning the original word stimulus card. YK also, for example, in the game of guessing what the ambiguous figures looked like, corrected the initial response by observing the eidetic image, or in the game of drawing a picture after

the model of someone's, she drew it by referring to the image. These instances are to be regarded as giving a support to Allport's expectation that eidetic imagery preserves and elaborates a concrete stimulus situation. Haber's findings suggested, however, that eidetic children did not use the added time available during which they were inspecting an image to help them memorize it. This fact perhaps does not support the Allport's assumption. Anyway, an eidetic image which succeeds to the removal of stimulus is quite possible to have little informational cognitive function, because the required information can be got from the original stimulus in the ordinary situations. When YK experiences eidetic imagery in connection with the contents of long-term memory, it is more likely that eidetic imagery accompanies spontaneously or voluntarily with the recall, which affords confidence and reality, than that it preserves the stimulus photographically and elaborates. As the Allport's assumption expects the positive role of eidetic imagery in cognitive function, which Haber denied, further examinations are required.

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